peduncles and the nucleus dentatus, to the greater part of the fibers of the superior peduncles.

The above shows a more intricate connection of the cerebellum with other parts of the nervous system than has hitherto been demonstrated.

Sezione mediana antero-posterioe del verme del cervelletto. GALLERANI, G., AND BORGHERINI, A. Revista Sperimentale di Freniatria e di Med. Legale, Vol. XVIII. p. 369-388. 1892.

The authors state at the outset that their work was compiled before Luciani's book, Il Cervelletto, appeared, and that they will not take this occasion to discuss it. The work is further a continuation of experiments reported in the same journal in 1888. They bring forward but two experiments, both upon dogs, in the first of which the median division of the vermis was partial, extending about two-thirds its depth; the second, it was complete.

The first dog, one day after the operation, was unable to stand upon his feet. On the second day, he made weak attempts at walking. The trunk oscillated. On the fourth day, walking was still performed with legs half flexed. The gait was plainly ataxic, and ataxy of head and neck was seen when the animal tried to take food into his mouth. This condition of things is still present upon the ninth day. Observations upon the thirty-third day show that there is still ataxy, and lack of power to co-ordinate the muscles properly. This is seen especially when the animal begins a certain action. Once started, he can go on fairly well. He can run well, but in a slow walk his course is zigzag. All symptoms have about disappeared by the ninety-fifth day, when the dog is killed. Autopsy shows that the incision extended through about two-thirds of the depth of the vermis, and was healed with connective tissue.

In the case of the second dog, the phenomena are more marked and persistent. Upon the 142d day, the erect posture was maintained with oscillation of the trunk and with legs wide apart. Voluntary acts are done with slowness and attention, and although considerable improvement has been made in this respect, they are still ataxic. At this time, the animal was killed, and it was found that the division of the vermis was complete and remained so, the wound having become filled with connective tissue.

The authors consume three pages with their conclusions from these two experiments. Their aim in this seems to be to refute the idea of Schiff to the effect that the asymmetry of cerebellar lesions is of special importance in determining the amount of disturbance, and to contradict everything possible in Luciani's book. They further insist upon the correctness in the main of the old view, viz., that the cerebellum stands in close relation to the co-ordination of voluntary movements, both such as are directly voluntary and such as have become automatic by long use. The action of the cerebellum, they would explain, as Wundt does, as a kind of complicated reflex, which is composed on the one side of all the centripetal impulses from the skin, muscles, and organs of special sense, and upon the other side, of all the motor impulses which keep the body in equilibrium or render movement orderly. A lesion of the cerebellum will create a disturbance of co-ordination, not from the fact that it is asymmetrical, which has no influence in itself, but in proportion as it severs connection in the cerebellum with the different parts of its own mass, and especially as it interferes with the normal connections of the cerebellum with the other parts of the nervous system. The vermis connects the lateral hemispheres,

and hence it is that lesion of the vermis is more apt to produce motor disturbance than lesion of the hemispheres.

The above summarizes the points of chief interest in their paper. It is followed in the journal by a six-page "nota critica" by Luciani, in which he is not careful to spare the feelings of the "youthful authors," as he repeatedly calls them. That it is difficult to make out the exact meaning of a number of Gallerani's and Borgherini's concluding statements may be seen from the fact that Luciani himself, presumably a master of the Italian language, is unable to do so. Before some of their sentences, Luciani says that he "stands with open mouth, like the country bumpkin before his curate, to whose long words his intelligence does not reach." He is not slow, however, in asking whether in this case the intelligence of the curate or the audience is at fault. The criticism abounds toward the end in such expressions as "I giovani autori;" "Qui l'audacia dei valorosi giovani;" "Questo concetto dottrin ali;" and the like.

In as far as this is a family quarrel among Italian physiologists, we do not wish to follow it. But if there is anything to be said in favor of the old view of cerebellar function, now is the time to say it. If after the entire cerebellum had been oblated, as in the case of Luciani's monkey, the animal is able, within an hour after the operation, to "reach out a trembling hand for fruit," it would seem to be proof positive that the mechanism for muscular co-ordination must be somewhere else than in the cerebellum. If on the other hand a lesion of the cerebellum can be made which causes "oscillation," "ataxy," and in general faulty co-ordination of the muscles one hundred and forty-two days after the operation, we are glad to have attention called to the fact.

The Origin of the Sertoli's Cell. WATASE. Am. Naturalist, Vol. XXVI. May, 1892, p. 442.
On the Significance of Spermatogensis. Ibid. July, 1892, p. 624.
On the Phenomena of Sex Differentiation. Ibid. Jour. of Morphology, Vol. VI. p. 841.

In the above papers Watase advances some new experiments which disprove, or profoundly modify, the old dictum of the cytologists, "Chromatin is unsexed." By the use of differential stains, at any rate, male and female nuclei are found to react differently. Watase employed the three aniline colors, viz., cyanine (blue), erothosine and chromotrop (red), and found that the nucleus of the ovum stained *red*, as in the case of most tissue cells, while that of the spermatozoan stained a *deep blue*. This fact Watase has succeeded in demonstrating for a long and widely different series of animals, including both invertebrates and vertebrates from the starfish to man.

The experiments are chiefly confirmatory of Auerbach's recent investigations, but at one point at least they constitute a decided advance. This is the fact given by the author as the reason for the last paper on the list, that, while the male and female nuclei as found in ovum and spermatozoan are as unlike as blue and red, after penetration of the spermatozoan and before the union of the two, the male and female pro-nuclei come to stain exactly alike.

We are led by the author's statement to the effect that the above papers are of the nature of preliminary communications to look forward to a more complete account of the work. The above is sufficient at any rate to again emphasize the folly of setting bounds to what may be accomplished by the proper refinement of method.